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Jérôme Lejeune (1926–94): In Memoriam

The obituary in the respected Paris newspaper *Le Monde* on April 5, 1994 was captioned: "The Death of Geneticist Jérôme Lejeune." The print in the caption was modest in size, concise, and elegant, reminiscent of the man it was meant to commemorate. The opening sentence specified with Gallic precision: "Professor Jérôme Lejeune died Sunday, April 3 at 7 A.M. of lung cancer." The next sentence might have been "He was 67" or at least given another piece of information customary in an obituary. Instead, it read: "Jérôme Lejeune was a Christian physician." Jérôme Lejeune would have liked that. It was not an idiosyncratic statement by the writer of the obituary in *Le Monde*. The obituary notice for Lejeune in another newspaper, *Le Figaro* (April 4, 1994), also stressed the words "Christian physician." This was a defining point. Some would say that Lejeune's religion was too dominant, that it and the positions it engendered were detrimental to his role as a scientist. Jérôme Lejeune would not have agreed at all. To him, being a "Christian physician" was central to his being. Absolutely central.

Jérôme Lejeune was also the quintessential Parisian. He was born on June 13, 1926 in Montrouge, just outside Paris. He studied in Paris, spent his career in Paris, and died in a Paris-area clinic.

To the lay world, Jérôme Lejeune would be seen as the "discoverer of the cause of mongolism." (At the time that Jérôme Lejeune found trisomy 21, Down syndrome was known as "mongolism." In fact, in France it is still called "mongolism" by the media.) Writing in the weekly *Figaro* magazine (1994, p. 28), Professor Lucien Israël recounted that when he initially met Lejeune in 1951, Lejeune "confided to me that he had chosen to work on the mechanisms and characterization of mongolism; and he hoped within two to three years to pierce the secret." It took Lejeune some extra years, but it was he who would do it, as Israël put it, "for the greater glory of French medicine."

To accomplish his youthful ambition and pierce the secret of mongolism, Lejeune went to work with Raymond Turpin. Turpin had long been interested in the disease and as early as 1931 had written on its clinical features. In 1947 the first cellular anomaly in mongolism was described by Turpin and Bernyer, who found that the degree of nuclear segmentation of the polymorphonuclear leukocytes was consistently less than normal. From 1953 on, Lejeune published with Turpin on such matters as familial mongolism and dermatoglyphics in patients and their relatives. Turpin and Lejeune would later coauthor a marvelous textbook of human cytogenetics: *Les chromosomes humains*. In it, Lejeune wrote: "The first patient observed in Paris (July 1958) revealed the existence of an excess chromosome (47 in place of 46) and the hypothesis was discussed of a fragment due to breakage at a particular point in a chromosome 4 as was also the hypothesis of a true supernumerary. In January 1959 the study of two other cases permitted the existence of the supernumerary to be affirmed and, in February, to be confirmed on a total of 9 patients" (Lejeune and Turpin 1965, p. 95). The reference to the first case was to *Lejeune J. Symposium sur les chromosomes humains en culture de tissues. McGill University Montréal (non publié)*. Lejeune was 32 years old at the time. The reference to "affirmed" was to Lejeune, Gauthier, and Turpin, "Les chromosomes humains en culture de tissus," published on January 26, 1959. This publication, despite its unrevealing title, was the first report of the supernumerary chromosome in Down syndrome. January 26, 1959 could be considered the birthdate of clinical cytogenetics.

This historic finding of trisomy 21 was a simple one. Lejeune liked to say that his used microscope cost the equivalent of $7 and had a defective ratchet and that, to keep the objective lens from crashing into the slide, he wedged an aluminum cigarette wrapper into the ratchet.

Lejeune's discovery of trisomy 21 cannot be said to have been an unexpected bolt from the blue. The idea that mongolism might be due to a chromosome anomaly had been repeatedly suggested. Among those who espoused this idea before World War II were Waardenburg in 1932, Blayer in 1934, Turpin and Caratzali in 1937, and Penrose and Fanconi, both in 1939. In 1952, Ursula Mittwoch published a paper on "The Chromosome Complement in a Mongolian Imbecile." In a testicular biopsy, she saw 24 meiotic chromosomal masses. Since the normal somatic human chromosome number was still thought to be 48, she concluded that 24 was normal in meiosis. In reality,

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Mittwoch was the first person to "see" the extra chromosome in mongolism.

Fame came to Lejeune because he not only saw the extra chromosome but recognized it. Any one of a number of other pioneers in cytogenetics might well have done the same thing, but they did not. Perhaps Lejeune's next most momentous find was the first autosomal deletion, 5p−, in cri du chat syndrome in 1963. However, none of Lejeune's subsequent research brought him celebrity approaching that which came with trisomy 21. Achievement bred achievement. Lejeune received his doctorate in science, and his thesis on "Le mongolisme" was published (Lejeune 1960). Since 1952 a member of the National Center of Scientific Research (CNRS), he was made Director of Research by CNRS in 1963. In 1964 he was named Professor of Fundamental Genetics at the Faculty of Medicine and head of the Laboratory of Fundamental Genetics at the Necker-Enfants Malades Hospital. He received many prizes. One from the Kennedy Foundation included a sum of money with it. I remember Lejeune one day in 1963 as he climbed on his motor-assisted bicycle, laughing that, thanks to the Kennedys' generosity, he could now afford to travel in style; with that, he putt-putted away. In 1969 he received the William Allan Award from The American Society of Human Genetics.

Lejeune's prestige gave him a platform for his views, and he was not loathe to express them. His talk accepting the Allan Award was on what he apocalyptically called the "National Institutes of Death." In France, Lejeune was President, then Scientific Counselor to the antiabortion movement "Laissez-les vivre" (Let them live). He lost no opportunity to denounce therapeutic abortion, oral contraceptives, and most recently, cloning.

Jérôme Lejeune was more than simply an "ardent militant." He was a "close" advisor of Pope John Paul II. The two men had known each other for a long time. For 20 years Lejeune served as a member of the Pontifical Academy of Sciences. He was a member of the Pope's Council on Health Workers. (On May 13, 1981, Lejeune and his wife had lunch with the Pope hours before the attempt was made on the pontiff's life in front of St. Peter's). Knowing that Jérôme Lejeune was dying, the Pope named him, on March 1, 1994, President of the Pontifical Academy of Life. The charge of this newly created body that Lejeune and the pontiff "wanted and founded" was to study the relationships between biomedicine and Christian morals. It would not be unreasonable to say that Jérôme Lejeune was an extremely influential person as regards the Catholic Church's position on reproduction.

On April 2, 1994 Lejeune received a telegram from the Pope reiterating his friendship and sending his papal blessing. The next morning, on Easter morning, Jérôme Lejeune died.

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